

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims**

1. (Original) A method for handling errors in a service program including service functions capable of being called from application programs, comprising:

receiving a call for one service function from a service function call within one application program;

performing a series of test operations when executing the service function call, wherein each test operation returns an identifier if the test operation failed, wherein each identifier is associated with one error state; and

if one test operation failed, transmitting the identifier associated with the error state of the failed test operation to an error handling agent, wherein the error handling agent accesses error information associated with the identifier and generates error information describing a specific cause of the error that caused the test operation to fail.

2. (Original) The method of claim 1, wherein the identifier indicates an occurrence of an error at a unique location in the service program.

3. (Original) The method of claim 1, further comprising:

if no test operation for the called service function failed, then transmitting one identifier indicating that no error occurred to the error handling agent.

4. (Original) The method of claim 1, wherein the error handling agent is separate from the service program receiving the call.

5. (Original) A method for handling errors resulting from execution of a service function in a service program, wherein one application program calls the service function in the service program, comprising:

receiving an identifier from the service program executing the service function, wherein the service program performs a series of test operations when executing the service function, wherein each test operation returns one identifier if the test operation failed that is associated with one error state;

if the received identifier indicates that one error occurred during execution of the service function, then generating and transmitting a return code to the application program indicating that an error occurred.

6. (Original) The method of claim 5, wherein the identifier indicates an occurrence of an error at a unique location in the service program.

7. (Original) The method of claim 5, further comprising:

if the received identifier indicates that one error did not occur during execution of the service function, then the generated return code indicates that no error occurred.

8. (Original) The method of claim 5, further comprising:

returning additional data describing the error to the application program if the return code indicates that one error occurred.

9. (Original) The method of claim 5, wherein the return code comprises generic error information, wherein one return code is used to provide generic error information for multiple identifiers.

10. (Original) The method of claim 5, further comprising:  
receiving data related to the failed test operation from the service program; and  
including the received data related to the failed test operation within the generated error information.

11. (Original) The method of claim 5, further comprising:  
generating error information providing a description of the service function error associated with the received identifier.

12. (Original) The method of claim 11, further comprising:  
writing the generated error information to a log file.

13. (Original) The method of claim 11, further comprising:  
providing a directory including entries corresponding to identifiers capable of being received from the service function, wherein the directory maintains error information for identifiers that describes a specific cause of the test operation failure associated with the identifier;

accessing one entry in the directory corresponding to the received identifier, wherein the generated error information comprises the description of the specific cause of the error in the directory entry for the received identifier.

14. (Original) The method of claim 13, wherein the directory further maintains a generic error code in each entry, wherein the same generic error code is used for multiple identifiers providing a general description of the error state resulting from the failure of the test operation, and wherein the return code transmitted to the application program comprises the generic error code for the received identifier in the directory.

15. (Original) The method of claim 13, further comprising:  
detecting a change in a version number of the service program;  
accessing an updated directory reflecting changes resulting from an update to service functions in the service program; and  
replacing the directory with the updated directory, wherein the updated directory is capable of including modifications to the identifiers and error information.

16. (Original) The method of claim 5, wherein the application program and service program execute on different computer systems.

17. (Original) The method of claim 5, wherein the application program and service program run on different operating system platforms.

18. (Original) The method of claim 5, wherein the service program comprises an operating system program.

19. (Original) The method of claim 5, wherein the steps of receiving the identifier, generating the error information, and transmitting the data are performed by a program that is external to the application program and service program.

20. (Original) A system for handling errors resulting from execution of a service function in a service program, comprising:

- (a) at least one computer readable medium, including:
  - (i) an application program;
  - (ii) a service program;
  - (iii) at least one service function included in the service program;
  - (iv) an error handling agent;
- (b) means, performed by the application program, for calling one service function in the service program;
- (c) means, performed by the service program in response to the call to the service function, for:
  - (i) performing a series of test operations when executing the service function, wherein each test operation returns one identifier if the test operation failed that is associated with one error state;
  - (ii) transmitting the identifier associated with the error state of the failed test operation to the error handling agent if one test operation failed; and
- (d) means, performed by the error handling agent, for:
  - (i) receiving the identifier from the service program executing the service function;
  - (ii) generating and transmitting a return code to the application program indicating that an error occurred if the received identifier indicates that one error occurred during execution of the service function.

21. (Original) The system of claim 20, wherein the identifier indicates an occurrence of an error at a unique location in the service program.

22. (Original) The system of claim 20, wherein the generated return code indicates that no error occurred if the received identifier indicates that one error did not occur during execution of the service function.

23. (Original) The system of claim 20, wherein the means performed by the error handling agent further performs:

returning additional data describing the error to the application program if the return code indicates that one error occurred.

24. (Original) The system of claim 20, wherein the return code comprises generic error information, wherein one return code is used to provide generic error information for multiple identifiers.

25. (Original) The system of claim 20, wherein the means performed by the error handling agent further performs:

receiving data related to the failed test operation from the service program; and  
including the received data related to the failed test operation within the generated error information.

26. (Original) The system of claim 20, wherein the means performed by the error handling agent further performs:

generating error information providing a description of the service function error associated with the received identifier.

27. (Original) The system of claim 26, wherein the means performed by the error handling agent further performs:

writing the generated error information to a log file.

28. (Original) The system of claim 26, wherein the means performed by the error handling agent further performs:

providing a directory including entries corresponding to identifiers capable of being received from the service function, wherein the directory maintains error information for identifiers that describes a specific cause of the test operation failure associated with the identifier; and

accessing one entry in the directory corresponding to the received identifier, wherein the generated error information comprises the description of the specific cause of the error in the directory entry for the received identifier.

29. (Original) The system of claim 28, wherein the directory further maintains a generic error code in each entry, wherein the same generic error code is used for multiple identifiers providing a general description of the error state resulting from the failure of the test operation, and wherein the return code transmitted to the application program comprises the generic error code for the received identifier in the directory.

30. (Original) The system of claim 28, wherein the means performed by the error handling agent further performs:

detecting a change in a version number of the service program;

accessing an updated directory reflecting changes resulting from an update to service functions in the service program; and

replacing the directory with the updated directory, wherein the updated directory is capable of including modifications to the identifiers and error information.

31. (Original) The system of claim 20, wherein the application program and service program execute on different computer systems.

32. (Original) The system of claim 20, wherein the application program and service program run on different operating system platforms.

33. (Original) The system of claim 20, wherein the service program comprises an operating system program.

34. (Original) The system of claim 20, wherein the error handling agent executes externally from the application program and service program.

35. (Original) The system of claim 20, wherein each error state is associated with one location in source code for the service function call.

36. (Original) An article of manufacture including code for handling errors in a service program including service functions capable of being called from application programs by:

receiving a call for one service function from a service function call within one application program;

performing a series of test operations when executing the service function call, wherein each test operation returns an identifier if the test operation failed, wherein each identifier is associated with one error state; and

if one test operation failed, transmitting the identifier associated with the error state of the failed test operation to an error handling agent, wherein the error handling agent accesses error information associated with the identifier and generates error information describing a specific cause of the error that caused the test operation to fail.



37. (Original) The article of manufacture of claim 36, wherein the identifier indicates an occurrence of an error at a unique location in the service program.

38. (Original) The article of manufacture of claim 36, further comprising:  
if no test operation for the called service function failed, then transmitting one identifier indicating that no error occurred to the error handling agent.

39. (Original) The article of manufacture of claim 36, wherein the error handling agent is separate from the service program receiving the call.

40. (Original) An article of manufacture for handling errors resulting from execution of a service function in a service program, wherein one application program calls the service function in the service program, by:

receiving an identifier from the service program executing the service function, wherein the service program performs a series of test operations when executing the service function, wherein each test operation returns one identifier if the test operation failed that is associated with one error state;

if the received identifier indicates that one error occurred during execution of the service function, then generating and transmitting a return code to the application program indicating that an error occurred.

41. (Original) The article of manufacture of claim 40, wherein the identifier indicates an occurrence of an error at a unique location in the service program.

42. (Original) The article of manufacture of claim 40, further comprising:  
if the received identifier indicates that one error did not occur during execution of the  
service function, then the generated return code indicates that no error occurred.

43. (Original) The article of manufacture of claim 40, further comprising:  
returning additional data describing the error to the application program if the return code  
indicates that one error occurred.

44. (Original) The article of manufacture of claim 40, wherein the return code comprises  
generic error information, wherein one return code is used to provide generic error information  
for multiple identifiers.

45. (Original) The article of manufacture of claim 40, further comprising:  
receiving data related to the failed test operation from the service program; and  
including the received data related to the failed test operation within the generated error  
information.

46. (Original) The article of manufacture of claim 40, further comprising:  
generating error information providing a description of the service function error  
associated with the received identifier.

47. (Original) The article of manufacture of claim 46, further comprising:  
writing the generated error information to a log file.

48. (Original) The article of manufacture of claim 46, further comprising:  
providing a directory including entries corresponding to identifiers capable of being received from the service function, wherein the directory maintains error information for identifiers that describes a specific cause of the test operation failure associated with the identifier;

accessing one entry in the directory corresponding to the received identifier, wherein the generated error information comprises the description of the specific cause of the error in the directory entry for the received identifier.

49. (Original) The article of manufacture of claim 48, wherein the directory further maintains a generic error code in each entry, wherein the same generic error code is used for multiple identifiers providing a general description of the error state resulting from the failure of the test operation, and wherein the return code transmitted to the application program comprises the generic error code for the received identifier in the directory.

50. (Original) The article of manufacture of claim 48, further comprising:  
detecting a change in a version number of the service program;  
accessing an updated directory reflecting changes resulting from an update to service functions in the service program; and  
replacing the directory with the updated directory, wherein the updated directory is capable of including modifications to the identifiers and error information.

51. (Original) The article of manufacture of claim 40, wherein the application program and service program execute on different computer systems.

52. (Original) The article of manufacture of claim 40, wherein the application program and service program run on different operating system platforms.

53. (Original) The article of manufacture of claim 40, wherein the service program comprises an operating system program.

54. (Original) The article of manufacture of claim 40, wherein the steps of receiving the identifier, generating the error information, and transmitting the data are performed by a program that is external to the application program and service program.